

REMARKS

This reply is responsive to the outstanding Office Action (mail date May 16, 2006). Prior to this Amendment, claims 1-66 were pending. In the Office Action, claims 1-66 were subjected to a restriction requirement. During a teleconference with Lucy C. Weiss on January 23, 2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-31. Claims 32-66 have been withdrawn from consideration. Claims 1, 32, and 52 have been amended for purposes of clarification without surrendering claim scope.

Restriction Requirement

Claims 1-66 were restricted under 35 USC § 121 as follows:

I. Claims 1-31 are said to be drawn to an electrochemical device wherein the cooling bladder has inlet and outlet ports and a heat transfer medium passing through the inlet and outlet ports to control an operating temperature of the electrochemical cell.

II. Claims 32-51 are said to be drawn to an electrochemical device wherein the cooling having a strength sufficient to hold a pressure that maintains the electrochemical cells in a state of compression during charge and discharge cycling.

III. Claims 52-66 are said to be drawn to a method of providing cooling to an electrochemical device.

Reconsideration and withdrawal or modification of the restriction requirement is respectfully requested in view of the following arguments.

The Office Action dated 5/16/2006 states that the inventions of Groups I, II and III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they purportedly lack the same or corresponding special technical features.¹ The Office Action cites MPEP 1850 as one reason in support of this assertion. MPEP 1850 states that any international application must relate to one invention or to a group of inventions so linked as to form a single general inventive concept. The Office Action also asserts that the special technical feature of at least one independent claim in Groups I or III is anticipated or obvious in view of Kaufman et al. (US 4,945,010), which purportedly teaches or suggests Applicant's claimed

¹ Office Action mailed 5/16/06, page 2, ¶ 2.

“cooling bladder formed of a conformable thermally conducting material.”² The Office Action further asserts that the special technical feature of Group II is the cooling bladder having sufficient strength to hold a pressure that maintains the electrochemical cell in a state of compression during charge and discharge cycling.

Applicant respectfully traverses the restriction requirement of Groups I, II and III with respect to the purported lack of a single inventive concept and the alleged lack of the same or corresponding special technical features. In Group I and II, Applicant broadly claims an electrochemical storage device comprising a cooling bladder formed of a conformable thermally conducting material. In Group III, Applicant broadly claims a method of providing cooling within an electrochemical device, comprising providing a conformable, thermally conductive cooling bladder. Groups I, II and III are linked at least with respect to the special technical feature of a cooling bladder formed of a conformable thermally conducting material.

Contrary to the assertions in the Office Action, Group II is not differentiated from Group I or III by allegedly claiming a different special technical feature of the conformable bladder, i.e. that the conformable bladder has sufficient strength to hold a pressure that maintains the electrochemical cell in a state of compression during charge and discharge cycling. In each of Groups I, II, and III, the special technical feature linking the Groups is provided by at least the conformable thermally conductive cooling bladder. Although the conformable thermally conductive bladder may have some different characteristics in Groups I and II, at least the special technical characteristic of a conformable thermally conductive bladder is common to Groups I, II and III. In each Group, novel elements of the claims are directed, at least in major part, to a conformable thermally conductive cooling bladder. As argued below and contrary to the assertions in the Office Action, the prior art of record neither teaches nor suggests an electrochemical storage device comprising a cooling bladder formed of a conformable thermally conducting material. Because each Group is linked by at least the novel special technical feature of a conformable thermally conductive bladder, the requirements of PCT Rule 13.2 are met. As a result, each Group includes claims directed to a single general inventive concept as required by PCT Rule 13.1. For at least these reasons, the restriction requirement is unwarranted and should be withdrawn.

² *Id.*, See also Applicant’s pending application, claims 1, 32 and 52.

In addition, were restriction to be effected between the claims in Groups I, II and III, a separate examination of the claims in Groups I, II and III would require substantial duplication of work on the part of the U.S. Patent and Trademark Office. Even though some additional consideration may be necessary, the scope of analysis of novelty of all the claims of Groups I, II and III would have to be as rigorous as when only the claims of Group I were being considered by themselves. Clearly, this duplication of effort would not be warranted where these claims are so interrelated.

To comply with 37 CFR § 1.142, Applicant hereby confirms the oral election of Group I, claims 1-31 drawn to an electrochemical storage device, with traverse as provided above.

Claim Amendment

Claim 1 is amended herein to clarify that the cooling bladder deforms to maintain contact with at least the first planar surface or the second planar surface of each of the electrochemical cells during the volumetric changes of the electrochemical storage device during charge and discharge cycling. Support for the amendment is provided in Applicant's specification, for example, at page 9, lines 21-28. In particular, Applicant's specification states that "[i]n broad and general terms, a temperature control bladder or pouch of the present invention (referred to herein as a cooling bladder, although cooling/heating bladder is equally applicable) is formed of a deformable, thermally conductive material through which a heat transfer medium passes."³ "The deformable cooling bladder may be formed to take on a variety of shapes, sizes and lengths to accommodate a wide variety of cell stack geometries."⁴ Withdrawn claims 32 and 52 also are amended herein with corresponding clarifying amendments.

Rejections Under 35 U.S.C. § 102

Claims 1-15, 17, 20-24, and 27-31 stand rejected under 35 USC § 102(b) as purportedly being anticipated by Verhoog (U.S. Patent No. 6,296,968). With respect to independent claim 1 and dependent claim 14, the Office Action asserts that Verhoog teaches electrochemical cells comprising first and second planar surfaces (Figure 4) and being subject to volumetric changes during charge cycling (column 1, lines 24-25), with a unitary cooling tank (Figure 4) formed of a

³ Applicant's pending application, page 9, lines 21-24.

⁴ Applicant's pending application, page 9, lines 26-28.

polypropylene material (column 4, line 40) and having an inlet fluid orifice and an outlet fluid orifice (column 2, lines 34-36), the cooling bladder having a substantially flat shape (Figure 4), and circulating liquid between the inlet and outlet (column 1, lines 55-60).⁵ Applicant respectfully traverses the rejection to the extent that it applies to independent claim 1, as amended, and claim 14, which depends upon independent claim 1.

As a threshold matter, Applicant notes that the Patent Office fails to meet its burden of proof with respect to establishing that the prior art anticipates all elements of claim 1. In particular, to the extent that Verhoog discloses an electrochemical cell with a unitary cooling tank, the Office Action has failed to establish that the electrochemical cell changes volume on charging and discharging. The Office Action cites to Verhoog, column 1, lines 24-25 in support of the assertion that Verhoog teaches an electrochemical cell subject to volumetric changes.⁶ However, Verhoog actually states “[t]he various states of use of a storage battery (charging, overcharging, discharging) are known to raise temperature, which modifies its performance.”⁷ However, the Patent Office has not shown how Verhoog teaches an electrochemical cell that changes volume during charging and discharging cycling. For at least this reason, the rejection is unwarranted and should be withdrawn.

Applicant respectfully asserts that a teaching of a temperature change is not sufficient to teach a volumetric change for an individual electrochemical cell. If the Examiner is relying upon personal knowledge that individual electrochemical cells of Verhoog undergo volume changes during charging and discharging, the Examiner is respectfully requested to supply an affidavit for this record as per 37 CFR § 1.104(d)(2), to cite evidence to this effect, or to withdraw the unsupported assertion.

In addition, Applicant respectfully asserts that the Office Action fails to establish where Verhoog teaches a deformable cooling bladder formed of a conformable thermally conducting material, and having an inlet and outlet port. The Office Action cites to Verhoog, column 2, lines 34-36 as supporting the assertion that Verhoog teaches a bladder having inlet and outlet ports. However, that complete citation actually refers to “a compartment defined by two flanges, the

⁵ Office Action mailed 5/16/06, pages 3-4, ¶ 6.

⁶ *Id.*

⁷ Verhoog, US 6,296,968, column 1, lines 24-26.

compartment has a fluid inlet orifice communicating with a common outlet manifold.”⁸ Applicant respectfully submits that a teaching of a compartment having an fluid inlet orifice communicating with a common outlet manifold does not teach a heat transfer medium passing between the inlet and outlet ports of a cooling bladder. In fact, Applicant respectfully submits that Verhoog’s mere teaching of a compartment defined by flanges even falls short of any teaching Applicant’s required deformable cooling bladder.

Disclosure of a tank does not provide a teaching or suggestion of a deformable bladder. A bladder is a deformable bag or pouch. A tank is a rigid container. Verhoog acknowledges the rigidity of its cooling tank, for example, by stating that the bottom 3 of its battery assembly is heat-welded to the tank 2 after the electrode assemblies have been asserted into their respective cells.⁹ The Patent Office has not shown how Verhoog’s unitary cooling tank could undergo deformation in response to individual electrochemical cell volumetric changes like Applicant’s claimed bladder. For Verhoog’s unitary cooling tank to deform in response to volumetric changes of individual electrochemical cells, the entire bottom casing of the rigid battery assembly would necessarily deform, thereby warping the bottom casing of the battery assembly and compromising the integrity of the battery.

To support an anticipation rejection under 35 U.S.C. 102(b), it is well established that a prior art reference must disclose each and every element of a claim (often referred to as the “all-elements rule.”)¹⁰ If a prior art reference fails to disclose any element of a claim, then rejection under 35 U.S.C. 102(b) is improper.¹¹ Applicant respectfully submits that the Patent Office has provided no description, teaching, or suggestion in the reference of a deformable cooling bladder formed of a conformable thermally conducting material and having an inlet port and an outlet port, the cooling bladder deforming to maintain contact with at least the first planar surface or the second planar surface of each of the electrochemical cells during the volumetric changes accompany charging and discharging. Because the Patent Office has not shown where Verhoog

⁸ Verhoog, US 6,296,968, column 1, lines 34-37.

⁹ Verhoog, US 6,296,968, column 4, lines 43-44.

¹⁰ See *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 231 USPQ 81 (Fed. Cir. 1986) (“it is axiomatic that for prior art to anticipate under 102 it has to meet every element of the claimed invention”).

¹¹ *Id.* See also MPEP §2131, which cites, for example, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

describes, teaches, or suggests a deformable cooling bladder at all, the Patent Office has not met its burden of proof in establishing that Verhoog anticipates claim 1 of Applicant's pending application. For at least these reasons, the rejection of claim 1 under 35 U.S.C. § 102(b) cannot be maintained and should be withdrawn.

In addition to the foregoing, Applicant submits that a dependent claim should be allowed when its parent claim is allowed.¹² Claims 2-31 each depends from independent claim 1. Accordingly, when independent claim 1 is allowed, all claims depending therefrom should be allowed. For at least the foregoing reasons, the Patent Office has not met its burden of showing that the prior art anticipates Applicant's claimed invention. The rejection of claims 1-15, 17, 20-24, and 27-31 under 35 USC § 102(b) as being anticipated by Verhoog is unsupported by substantial evidence in part, and has been overcome in part, and should be withdrawn.

Rejections Under 35 U.S.C. § 103(a)

Claims 18 and 19 stand rejected under 35 USC § 103(a) as purportedly being unpatentable over Verhoog (U.S. Patent No. 6,296,968).¹³ Claim 16 stands rejected under 35 USC § 103(a) as purportedly being unpatentable over Verhoog as applied to claims 1-13, 19-24, 27-31 and further in view of Fitts et al. (US 2002/015333). Claims 25 and 26 stand rejected under 35 USC § 103(a) as purportedly being unpatentable over Verhoog as applied to claims 1-13, 19-24, 27-31 and in further view of Gyoten et al. (US 2001/0036567).¹⁴ Applicant respectfully traverses the rejection of claims 16, 18-19 and 25-26 in view of the asserted combinations Verhoog, Fitts, and Gyoten.

Applicant respectfully asserts that each of claims 16, 18-19 and 25-26 are at least nonobvious in view of the asserted combination of Verhoog, Fitts, and Gyoten because, for example, absent Applicant's own disclosure, the combination of the teachings of any of the references could not yield Applicant's claimed invention. In particular, the Patent Office has not shown any combination of the cited references that yields Applicant's claimed deformable cooling bladder formed of a conformable thermally conducting material and having an inlet port and an outlet port, the cooling bladder deforming to maintain contact with at least the first planar

¹² *In re McCarn*, 101 USPQ 411 (CCPA 1954).

¹³ Office Action mailed 5/16/06, page 5, ¶ 7.

¹⁴ Office Action mailed 5/16/06, pages 5-6, ¶ 7-9.

surface or the second planar surface of each of the electrochemical cells during the volumetric changes accompany charging and discharging.

As discussed *supra*, to the extent that Verhoog discloses an electrochemical cell with a unitary cooling tank, the Patent Office has not shown where any teaching of a deformable cooling bladder, a cooling bladder having an inlet and an outlet port between which a heat transfer medium is passed, or even individual electrochemical cell volumetric changes during charge and discharge cycling. Similarly, the Patent Office has not shown where Fitts or Gyoten describes, teaches, or suggests a deformable cooling bladder, a cooling bladder having an inlet and an outlet port between which a heat transfer medium is passed, or even individual electrochemical cell volumetric changes during charge and discharge cycling. Applicant respectfully submits that the Patent Office failed to meet its burden of establishing that Verhoog or the combination of Verhoog with Fitts or Gyoten teaches or suggests all elements of Applicant's claimed invention.¹⁵ The rejection of claims 16, 18-19 and 25-26 under 35 USC § 103(a) as being unpatentable over Verhoog and the combinations of Verhoog with Fitts or Gyoten is unwarranted in part and has been overcome in part and should be withdrawn.

For at least the foregoing reasons, the Office Action has not met its burden of showing that the prior art anticipates or makes obvious Applicant's claimed invention. The rejection of claims 1-31 under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a) over the cited references is unwarranted in part, and overcome in part, and should be withdrawn.

Request for Rejoinder

Applicant notes that the features of claims 32 and 52 substantially are present in claim 1, which is patentable as noted above. Thus, claims 32 and 52 also should be patentable. Claims 33-51 depend directly or indirectly from claim 32 and claims 53-66 depend directly or indirectly from claim 52. Thus, Applicant respectfully requests rejoinder of claims 32-66 with claims 1-31 and allowance of all claims.

¹⁵ See MPEP 2142. See also *Crown Operations Intl., Ltd. v. Solutia, Inc.*, 62 USPQ2d 1917 (Fed. Cir. 2000) ("There must be a teaching or suggestion within the prior art, within the nature of the problem to be solved, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources, to select particular elements, and to combine them as combined by the inventor.")

CONCLUSION

Applicant has confirmed the oral election of Group I, with traverse. Based on the foregoing, it is submitted that the application is in condition for allowance. Examination and reconsideration of the claims as currently amended are respectfully requested. Withdrawal of the rejection of claims 1-31 under 35 U.S.C. § 102(b) and claims 16, 18-19 and 25-26 under 35 U.S.C. 103(a), and rejoinder of the inventions of Groups II and III with Group I are respectfully requested. Allowance of the claims at an early date is solicited. The Examiner is invited to contact Applicant's attorney to resolve any remaining questions.

Respectfully submitted,

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